

## Elizabeth Shay, PhD, AICP

Geography & Planning ✧ 363 Rankin Science W ✧ Appalachian State University ✧ Boone NC 28608 ✧ [shayed@appstate.edu](mailto:shayed@appstate.edu)

### EDUCATION

- PhD City and Regional Planning, University of North Carolina—Chapel Hill, 2007
- MLS School of Information and Library Science, University of North Carolina—Chapel Hill
- MS Russian, Jackson School of International Studies, University of Washington, Seattle WA
- BS Biology, Southern Oregon University, Ashland OR
- AICP American Institute of Certified Planners: exam-based professional accreditation, 2011

### PROFESSIONAL EXPERIENCE

- 2015- Assistant professor, Geography and Planning, Appalachian State University, Boone NC
- 2014-15 Community planner, North Carolina Department of Transportation, Human Environment
- 2010-14 Director, Sustainable Triangle Field Site, Institute for the Environment, UNC-Chapel Hill
- 2003-14 Research assistant professor (2013-14), research associate—Institute for the Environment, Lecturer—Curriculum for the Environment and Ecology, UNC-Chapel Hill
- Pre-2003 Editing, translating, publishing  
Manuscript office, *Environmental Science & Technology*, American Chemical Society, housed at UNC-Chapel Hill (managing manuscripts)  
Associated Publishers, St. Paul MN (translating *Pravda* into English, editing)  
Centre for Water Research, University of Western Australia, Perth (editing, writing)  
Current Digest of the Soviet Press, Columbus OH (translating, abstracting)

### TEACHING

#### Appalachian State University, 2015-

Town, city & regional planning	Planning tools & techniques	Land use regulations & controls
Transportation planning	Inside the sustainable city	Community development
Planning studio	Honors/graduate theses	Independent research

#### UNC—Chapel Hill, 2007-2014

Taught Urban transportation planning 2008, 2010

Directed Environmental Capstones, fall and spring semesters, for on- and off-campus clients

Designed, Principles of sustainability; Sustainable urban planning in Germany, Sweden, Denmark developed, Seminars: Cross-Atlantic sustainability, Sustainable food systems, Sustainability primer taught Sustainable community, Sustainable UNC

Assisted (guest lectures, grading, curriculum review, project development)

Energy and Material Flows	Cities of the Future	
Transportation Policy	Solving Urban Problems	Quantitative Methods in Planning

**RESEARCH—land use, transportation, built and natural environment, travel behavior**

- 2020-2023 NC Department of Transportation Center of Excellence in Advanced Technology Safety and Policy (public announcement pending). Appalachian State (Geography & Planning) is one of five partner universities (PI Radwan, UNC-Chapel Hill)
- 2019-2020 Appalachian State University, Research Institute for Environment, Energy & Economics. CONCERT grant—social work/planning (PIs MacNamara, Shay)
- 2018 Appalachian State University, Research Institute for Environment, Energy & Economics. Communication grant—public health messaging (PIs Hege, Shay, Sugg)
- 2018 Appalachian State University, Research Institute for Environment, Energy & Economics. SCORE grant—trans-disciplinary teaching (PIs MacNamara, Shay)
- 2017-2018 Collaborative Sciences Center for Road Safety, University of Tennessee (sub-contract). Connected and automated vehicles, safety, and walkability (PI Khattak)
- 2017-2019 Appalachian State University, University Research Grant. Student travel behavior
- 2016 Appalachian State University, summer faculty grant. Development of new applied-learning course on aging-in-place and elder-friendly built environment
- 2016-2018 Appalachian State University, Research Institute for Environment, Energy & Economics. CONCERT grant—mountain resilience (PIs Dempsey, Shay, Sugg)
- 2012-2014 NC Dept of Transportation. *Defining North Carolina's Transportation-Disadvantaged Populations*. UNC-Chapel Hill subcontract, NC State University (PI Lane)
- 2012-2013 National Inst Health. *System for Observing Play and Recreation in Communities*. (Review of park/recreation plans; physical activity in dog parks. PI Evenson)
- 2012 Preparedness & Emergency Response Research Center, UNC-Chapel Hill School of Public Health. *Emergency planning and response for vulnerable populations; emergency sheltering*. (PIs Berke, Horney)
- 2010-2011 Lincoln Institute of Land Policy. *Built environment and transport-related greenhouse gas emissions in Charlotte NC metro: An integrated model*. (PI Rodriguez)
- 2009-2010 US EPA Region 4. *Sustainable small and medium enterprises*. UNC-Chapel Hill Institute for the Environment and Duke University (PIs Shay, Gallagher)
- 2007-2011 National Heart, Lung and Blood Institute (RAND). *Away from home and out of school: Adolescent PA and BMI, Trial of Activity in Adolescent Girls 2*. UNC-Chapel Hill Center for Urban and Regional Studies (PIs Rodriguez, Evenson)
- 2005-2009 EPA STAR. *Regional development, population trend and technology change impacts on future air pollution emissions*. Auto ownership and travel behavior. UNC-CH Center for Urban & Regional Studies (PIs Rodriguez, Song)
- 2007-2008 Robert Wood Johnson Foundation, Active Living Research. *Testing associations between physical activity and the built environment*. Built environment and walking behavior. UNC- Center for Urban & Regional Studies (PI Rodriguez)
- 2007 Robert Wood Johnson Foundation, Active Living Research. *Collaborative intergovernmental school planning and active travel to school*. UNC-Chapel Hill Center for Urban & Regional Studies (PIs Salvesen, Shay)

**PUBLICATIONS****Peer-reviewed research**

- MacNamara, M, E **Shay**, “Innovative planning/social work collaboration to enhance sustainable development in rural communities,” in preparation, target—*Journal of Social Work Education*
- Shay**, E, AJ Khattak, A Boggs, “Safety in the connected and automated vehicle era: A U.S. perspective on research needs,” submitted, *Intelligent Transportation Systems Magazine*
- Zheng, M, AJ Khattak, E **Shay**, I. Mahdinia, “Analysis of Crashes Involving Pedestrians across the United States: Contributing human errors and implications Vehicle automation,” submitted, *Journal of Transportation Safety & Security*
- Shay**, E, M MacNamara, “Rural community development as a teaching environment for cross-professional training in macro social work and community and regional planning,” in press, *Contemporary Rural Social Work*
- Andersen, LM, A Bonevac, L Thompson, K Dempsey, **E Shay**, M Sugg, “Understanding key informant experiences and perceptions of the 2016 drought and wildfires in western North Carolina,” *Weather, Climate and Society*, 11, 2019.
- Shay**, E, AJ Khattak, B Wali, “Walkability in the connected and automated vehicle era: A U.S. perspective on research needs,” *Transportation Research Record* 2672, Washington DC 2018
- Shay**, E, T Combs, D Findley, C Kolosna, M Madeley, D Salvesen, “Identifying transportation disadvantage: Mixed-methods analysis.” *Transport Policy*, 48, 2016.
- Combs, T, E **Shay**, D Salvesen, C Kolosna, M Madeley, “Understanding the multiple dimensions of transportation disadvantage: The case of rural North Carolina.” *Case Studies on Transport Policy*, 4, 2016
- Evenson, KR, E **Shay**, S Williamson, DA Cohen, “Use of dog parks and the contribution to physical activity by their owners,” *Research Quarterly for Exercise and Sport*, April, 2016
- Shay**, E, S Caplow, “Integrated traditional and applied education in a public US university— Exploring sustainable cities and regions in classrooms and communities.” *Journal of Environmental Studies and Sciences*, 4 (4), 2014
- Shay**, E, T Combs, DA Salvesen, D DeTrizio, J Horney, “Closing the gap: Assessing disaster preparedness of officials and residents in two North Carolina counties,” *Journal of Geography and Natural Disaster*, 4 (2), 2014
- Shay**, E, “Sustainability capstones: Data-driven, policy-relevant projects to enhance learning,” *Journal of Sustainability Education*, June, 2013
- Rodriguez, DA, G-H Cho, JP Elder, TL Conway, KR Evenson, B Ghosh-Dastidar, E **Shay**, D Cohen, S Veblen-Mortenson, J Pickrell, L Lytle, “Identifying walking trips from GPS and accelerometer data in adolescent females,” *J Physical Activity & Health*, 9 (3), 2012
- Shay**, E, AJ Khattak. "Travel decision chains: Residential environment, automobile ownership, trips, and mode choice," *International Journal of Sustainable Transportation*, 6 (2), 2011

**Shay, E, DA Rodriguez, G Cho, KJ Clifton, KR Evenson, "Comparing objective measures of environmental supports for pedestrian travel in adults," *Inter J Health Geographics*, 8(62), 2009**

**Shay, E, AJ Khattak, "Toward sustainable transport: conventional and disruptive approaches." *International Journal of Sustainable Transportation*, 4 (1), 14-40, 2009**

Lees, E, DA Salvesen, E **Shay**, "Collaborative school planning and active schools: A case study of Lee County, Florida." *Journal of Health Politics, Policy and Law*, 33 (3), June, 2008

**Shay, E, AJ Khattak, "Automobiles, trips, and neighborhood type: Comparing environmental measures." *Transportation Research Record*, #2010, 73-82, Washington DC, 2007**

Fan, Y-L, AJ Khattak, and E **Shay**, "Intelligent Transportation Systems: What do patents and publications tell us?" *Journal of Intelligent Transportation Systems*, 11 (2), 91-103, 2007

**Shay, E, Y Fan, DA Rodriguez, AJ Khattak, "Drive or walk? Utilitarian trips within a neotraditional neighborhood." *Transportation Research Record*, #1985, Washington DC, 2006**

**Shay, E, and AJ Khattak, "Auto ownership and use in neo-traditional and conventional neighborhoods." *Transportation Research Record*, #1902, 18-25, Washington DC, 2005**

### ***Book chapters***

Riggs, W, M Schlossberg, E **Shay**, A Millard-Ball, "Transforming street design: Approaches to reengineering our neighborhood streets," Ch 5 in: *Disruptive Transport: Driverless Car, Transport Innovation and the Sustainable City of Tomorrow*, W Riggs ed, Routledge, 2019

Rodriguez, DA, E **Shay**, P Winn, "Comparative review of Portable GPS units," *Global Positioning Systems: Signal Structure, Applications, Sources of Error and Biases*, Nova, 2013

### ***White papers and articles***

Schlossberg, M, W Riggs, A Millard-Ball, E **Shay**, "Rethinking the street in an era of driverless cars," UrbanismNext, January 2018:

[https://urbanismnext.uoregon.edu/files/2018/01/Rethinking\\_Streets\\_AVs\\_012618-27hcy6.pdf](https://urbanismnext.uoregon.edu/files/2018/01/Rethinking_Streets_AVs_012618-27hcy6.pdf)

Salvesen, D, E **Shay**, L Ringaert, E Smith, "Going visitable." *Urban Land*, ULI, May, 2008

Salvesen, D, E Lees, E **Shay**. "Can mega-schools be tamed?" *Planning Magazine*, Feb, 2007

### ***Reports***

Rodriguez, DA, BJ Morton, Y Song, E **Shay**, J Huh, "Built environment and transport-related greenhouse gas emissions in the Charlotte NC metropolitan area: An integrated transportation-land development model," working paper, Lincoln Institute of Land Policy, 2011

**Shay, E, AJ Khattak, SC Spoon, "Walkable Environments and Walking Activity." Southeastern Transportation Center, Knoxville TN, 2003**

**Shay, E, et al. "A sustainable future for North Carolina," *CEP Environmental Policy Papers*, December, 2003, [http://www.cep.unc.edu/level\\_3/outreach/policy\\_papers.html](http://www.cep.unc.edu/level_3/outreach/policy_papers.html)**

## **PROFESSIONAL MEMBERSHIPS AND SERVICE**

American Planning Association

American Institute of Certified Planners

Town of Boone NC Planning Commissioner, 2016 – 2018; chair, 2018 -

Transportation Research Board, Standing Committee on Social and Economic Factors of Transportation—ADD 20, member, 2015-

Transportation Research Board/National Academies: National Cooperative Highway Research Program project panel #20-101, “Framework for Analyzing the Costs and Benefits of Adaptation Measures in Preparation for Extreme Weather Events and Climate Change,” member, 2014-2016

Transportation Advisory Board, Carrboro NC, 2000-2004

Peer reviewer for multiple journals in land use, transportation and sustainability

Appalachian State University, Service Learning Faculty Fellows program, 2016

## PRESENTATIONS AND PANELS

Association of Collegiate Schools of Planning, Annual Meeting. Combs and **Shay**, “Identifying municipal strategies for CAV-readiness through a transportation justice lens.” Greenville SC, October 2019

American Planning Association—North Carolina Chapter, Annual Meeting. **Shay** and MacNamara, “Rural Community Development—Planning and Macro Social Work Perspectives.” Wilmington NC, October 2019

Rural Social Work Caucus. MacNamara and **Shay**, “Innovative Collaborations to Enhance Sustainable Development in Rural Communities.” Paducah, KY, July 2019

Post-graduate Social Service Workforce Development Ulster University and Southern Health and Social Care Trust for Northern Ireland. MacNamara and **Shay**, “Innovative Collaborations to Enhance Sustainable Development.” Belfast Northern Ireland, April 2019

Transportation Research Board 98<sup>th</sup> Annual Meeting. **Shay**, Khattak, and Boggs, “Safety in the connected and automated vehicle era: A U.S. perspective on research needs.” Washington DC, January 2019

Joint World Conference on Social Work, Education and Social Development. MacNamara and **Shay**, “Innovative collaborations to enhance sustainable development in rural communities.” Dublin Ireland, July 2018

Transportation Research Board 97<sup>th</sup> Annual Meeting. **Shay**, Khattak and Wali, “Walkability in the connected and automated vehicle era: A U.S. perspective on research needs”; Zheng, Khattak and **Shay**, “Analysis of Crashes Involving Pedestrians across the United States: Implications for Connected and Automated Vehicles.” Washington DC, January 2018

Association of Collegiate Schools of Planning, Annual Meeting. Combs and **Shay**, “Anticipating travel behavior change among relocating university students.” Denver CO, October 2017

North Carolina Association of Metropolitan Planning Organizations, Annual Meeting. **Shay** and Combs, “Before-and-after travel choices of university students in newly constructed private off-campus mixed-use housing.” April 2017, New Bern NC

Appalachian Global Symposium, Appalachian State University. Kowalczyk, MacNamara, Ruseva and **Shay**, “Conceptualizing an Interdisciplinary Study-Away Course in Rural Sustainable Development.” Boone NC, November 2016

Centralina Council of Governments conference ‘Creative solutions for thriving communities.’ Morton, Rosemond and **Shay**, “Aging in the suburbs: Changes in the built environment that support well-being and mobility as we age.” Gastonia NC, December 2015

- Transportation Research Board 94<sup>th</sup> Annual Meeting. **Shay**, “Identifying transportation disadvantage: Mixed-methods analysis.” Washington DC, January 2015
- Global Sustainability Symposia, UNC-Chapel Hill. Member of planning committee, 2011-2014
- North Carolina Association of Metropolitan Planning Organizations. Co-author and graduate adviser, “Identifying transportation-disadvantaged populations: Preliminary findings and draft tool,” Toolkits and Technical track. Wilmington NC, May 2014
- Center for Global Initiatives Photo Competition/Presentation, Advised student presenters from 2013 Honors Study Abroad in Germany, Denmark, Sweden. Chapel Hill NC January 2014
- North Carolina Association of Metropolitan Planning Organizations. Combs and **Shay**, “Identifying North Carolina's Transportation-Disadvantaged Populations,” Environmental Justice track. Winston-Salem NC, May 2013
- EnvisionEAST-2050, 9-county planning exercise. Facilitator, Trenton NC, October 2012.
- North Carolina School of Science and Math—Sustainability Project kickoff. Invited speaker: “Sustainability—What it is, what it isn’t.” Durham NC, August, 2012
- North Carolina Emergency Management Association, spring conference. Salvesen and **Shay**, “Academic-community partnerships: Pilot projects in emergency, planning, response & sheltering for vulnerable populations.” Sunset Beach NC, March 2012
- North Carolina Conference on Aging Roundtable. “Accessible housing and age-integrated communities: Policies and programs for visitability and universal design.” October 2011
- Workshop: Sustainable Small & Medium Enterprises. Co-convener Durham NC, October 2010
- Summer Planning Institute, North Carolina Chapter, Amer Planning Assoc. **Shay**, “Planning and public health—The critical synthesis for sustainable communities.” Greenville NC, 2010
- Round Table on Sustainable Small Business, co-convener. Chapel Hill NC, March 2009
- Transportation Research Board 88<sup>th</sup> Annual Meeting, **Shay**, “Relation of residential environment to automobile ownership and travel choice.” Session: The Built Environment, Travel Behavior, Physical Activity, and Non-automobile Mode Use. Washington DC, January 2009
- Active Living Research Conference. Pre-conference workshop, “Using GPS and accelerometers in neighborhood research.” Washington DC, April 2008.
- Transportation Research Board 86<sup>th</sup> Annual Meeting, **Shay**, “Automobiles, trips, and neighborhood type: Comparing environmental measures.” Session: The Built Environment and Travel Behavior. Washington DC, January 2007
- Leadership Forum, Chapel Hill Carrboro Chamber of Commerce, invited panelist. October 2006
- Transportation Research Board 85<sup>th</sup> Annual Meeting. **Shay**, “Drive or walk? Utilitarian trips within a neo-traditional neighborhood.” Session: The Built Environment and Travel Choices: Unraveling the Relationships. Washington DC, January 2006
- Transportation Research Board 84<sup>th</sup> Annual Meeting. **Shay**, “Auto ownership and use in neo-traditional and conventional neighborhoods.” Washington DC, January 2005



**ADVISING*****Honors theses—advisor***

Andersen, L. “An Impact Assessment of Extreme Drought and Unprecedented Wildfire in the Southern Appalachian Mountains,” 2017, Appalachian State University

***Honors theses—reader***

Royster, B. “Evolution and impediments of NC’s methane capture pilot program,” 2011, UNC-Chapel Hill

Band, D. “Energy Information Systems and Conservation Psychology and their Potential for Reducing Energy Consumption at UNC,” 2010, UNC-Chapel Hill

***Graduate theses—adviser***

Bonevac, A., “Key informant perceptions of flooding and landslides in western North Carolina, USA, following the 2018 floods and landslides,” 2019

Bushell, M., “Design, policy, and bicycle ridership: A comparison between Berlin, Germany and Washington D.C.,” 2010

Callaway, B., “Town of Chapel Hill greenhouse gas emissions inventory municipal operations: 2005 through 2009,” best masters paper, UNC-CH Department of City and Regional Planning, 2010

Michler, R., “Vehicular cycling advocacy: A case study of Chapel Hill,” 2010

***Graduate theses—reader***

Down, E. “A Business Model for Local Agriculture,” 2017, Appalachian State University

***Interns—academic supervisor***

Planning internships: 2019: Bagli, Guigou, Mielenz, Mitchell; 2018: Allred, Everhart, Harris, Karlson, Kelley, Kern, Reid; 2017: Archer, O’Reilly; 2016: Williams

Environmental and Sustainability internships, 2008-2014, UNC-Chapel Hill, >70 undergraduates

**ENVIRONMENTAL CAPSTONES:** [http://www.ie.unc.edu/for\\_students/courses/capstone.cfm](http://www.ie.unc.edu/for_students/courses/capstone.cfm)

*2007-2014: Developed/coordinated capstones—senior team R&D projects for clients*

*Taught many of the 2007-2014 capstones, and coordinated and supported faculty who led others*

*\*Projects with week-to-week leadership by graduate student, or directed by other faculty or staff*

***Projects for campus clients***

*\*Efficient campus buildings—UNC Energy Management*

*Tarheel Bikes performance review, spatial analysis—UNC Tar Heel Bikes Steering Committee*

*Campus water—past and present*

*\*Green labs—Green Labs Committee, Office of Waste Reduction and Recycling*

*Transportation deserts—NC Dept of Transportation-funded research team at UNC-Chapel Hill*

*\*Campus carbon sequestration inventory and analysis—UNC emissions specialist*

*\*Campus rainwater management—UNC stormwater engineer, Environment, Health and Safety*

*\*Carolina Dining Services and local producers*

*Water conservation for long-range planning—advisory board for the Jordan Lake Rules*

*Campus bicycling environment*

*Water quality in rainwater harvesting cisterns—UNC’s Environment, Health and Safety*

*DELTA tracking/analysis*—Environmental Resource Program, UNC Institute for Environment  
*Sustainable housing*  
*Waste audit, strategic waste management plan*—UNC Office of Waste Reduction and Recycling  
*Energy efficiency in UNC buildings*—UNC emissions specialist  
*Green sustainable athletics*—Carolina Athletics, Office of Waste Reduction and Recycling  
*Sustainability research inventory*—UNC Sustainability Office  
*Laboratory recycling*—UNC Office of Waste Reduction and Recycling, lab manager  
*Campus foodprint*—Carolina Dining Service  
*Campus sustainability curriculum inventory*—UNC Sustainability Office  
*Campus Green Guide*—UNC Sustainability Office  
*Preserving Focus the Nation*—student leader with Focus the Nation national teach-in  
*Evaluating student energy use*—UNC Institute for the Environment  
*\*Air travel emissions*—UNC emissions specialist, Vice-Chancellor’s Sustainability Advisory C  
*Community sustainability self-assessment*—Town of Chapel Hill

***Projects for community (off-campus) clients***

*Vulnerability assessment of North Carolina communities*—eight counties, 2010-2014  
*\*Jordan Lake nutrient load*—Jordan Lake nutrient advisory board  
*\*Stream restoration/water quality*—faculty for: Ecosystem Enhancement Program, NC DENR  
*Organics collection feasibility study*—Orange County Department of Solid Waste Management  
*Community carbon*—Town of Chapel Hill  
*\*Recreation, conservation and economic development*—Conservation Fund  
*Re-use economy feasibility study*—small business collective in reuse and salvage  
*\*Converting waste to protein with black soldier flies*—Pickards Mountain Eco-Institute  
*\*Planning for climate change*—New Bern NC  
*Green purchasing*—Piedmont county sustainability planner  
*Triangle Green Business Challenge*—Triangle J Council of Governments  
*Energy-efficient public housing*—Town of Chapel Hill  
*Energy-efficient rentals*—Chapel Hill WISE (Worthwhile Investments Save Energy) program  
*Landfill expansion*—Cedar Grove Institute for Sustainable Communities  
*\*Recycling at apartment complexes*—Orange County Solid Waste Management  
*Carrboro greenhouse gas emissions inventory*—Town of Carrboro NC  
*OWASA energy management*—Orange Water and Sewer Authority  
*\*Homeowners Associations (HOAs) and sustainable neighborhoods*—Town of Carrboro  
*Anti-idling policy and program pilot*—Sustainable Sandhills, Fayetteville NC  
*Managing biosolids from municipal wastewater*—Orange Water and Sewer Authority  
*\*Scope 3 GHG emissions*—Town of Chapel Hill  
*Environmentally preferable purchasing program*—Town of Chapel Hill  
*\*Chapel Hill carbon reduction/fleets and streets*—Town of Chapel Hill  
*Chapel Hill carbon reduction/Transit survey and marketing*—Chapel Hill Transit, Chapel Hill  
*Plastic film recovery*—Orange County Dept of Solid Waste Mgmt, American Chemistry Council  
*Chapel Hill Transit carbon reduction*—Town of Chapel Hill  
*Frozen food packaging environmental footprint*—small commercial client  
*Greenbridge education center*—investors in mixed-use complex  
*Wachovia employee education module*—Wachovia

*\*Projects with week-to-week leadership by graduate student, or directed by other faculty or staff*